

## **Summary of Pre-Solicitation Workshop**

A pre-solicitation workshop for the Clean Coal Power Initiative (CCPI) was held on November 20, 2001 at the Ronald Reagan Building in Washington DC. The workshop provided a forum for DOE to gather stakeholder input on issues important to the structure and requirements of the planned Fiscal Year 2002 Round 1 Solicitation for the CCPI. The workshop was held immediately following the Clean Coal and Power Conference, where a status paper and presentation on the CCPI was provided. Approximately 80 attendees gathered to offer their viewpoints on the CCPI Round 1 Solicitation. The session lasted approximately two hours. This document provides a transcription of session discussions.

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### **Transcription**

*Michael Eastman (DOE)*

My name is Mike Eastman and I'm planning that we'll spend the next hour or so talking through issues relevant to the Clean Coal Power Initiative and the upcoming solicitation that DOE plans to run later this calendar year. Let's start the process more formally. So this is intended to be an informal gathering and feedback to the department, principally the purpose of the session is to continue to get input to DOE's upcoming solicitation. To help in the discussions today I have asked a couple of my peers to appear with me but again the purpose is not for us to be up here doing a question and answer but really just to ensure that we understand the questions and we may seek clarification from time to time but just for the purposes of letting you know who's here listening, in addition to the tape recorder on this panel. Ken Markel to my far right, is our Associate Director at NETL for project management, and the implementation of projects selected from the solicitation will ultimately carry into his division for the negotiation award and post-award DOE involvement. And to my immediate right is Tom Sarkus and he is the Division Director within the project management office at NETL, where these project managers will reside.

So my plan was to revisit the issues that I framed up earlier this morning and encourage some specific feedback on these issues to help us in the shaping process. It was not my intention to limit the topics for input to these six or eight topics that we have predisposed. Certainly, if we don't cover something that's specifically of interest to any of you out there, this would be a good opportunity to make your point.

Just as a matter of logistics, we hope to develop a summary of this input session and we will post it as quickly as we can on our CCPI website within the NETL webpage. In order to help us get this record right, I would ask you to go to the microphones scattered here. That way we'll be sure the tape recorders pick up your comments accurately. Any general questions before we get into it.

The first one is one that I've gotten a few comments on since this morning. People were feeling whether or not we're intended to be very prescriptive and limiting in our structuring of the solicitation. So let me just read what will be the objective of the

solicitation and the terminology that I'd used this morning was to focus the demonstrations on the latest technologies with the goal of modernizing the existing fleet of aging power plants. A question has come back to me, it says "Is this prescriptive and then as such eliminating potential technology demonstration projects that might not be focused on a retrofit or direct application to existing plants?" If folks would like to comment about their expectations relative to the solicitation in this regard, this would be a good time to do that. I can say that it is not our intent to be exclusive of those kinds of technologies but it certainly would help for folks to clarify their expectations on this point. So there are no issues here.

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*Art*

I know you know what my project is but I'll try to be general. My question is "when you say focus on demonstrations of the latest technologies, I'm wondering where the focus is between demonstration and commercialization? In other words, if you have a project say that was previously demonstrated, will CCPI have some focus on taking that demonstrated technology to the next level?"

*Michael Eastman (DOE)*

Art, I'm going to have to ask you to approach this process a little differently in terms of if you have needs with respect to what you're desires and expectations are relative to this solicitation. If you could make it the way you wanted, we need to understand what that is rather than have me give you an answer, which I'm really not in the position to do. This is an opportunity for us to understand what the stakeholders want and expect from such a solicitation. So, if you have a way of slicing the pie, we need to hear what that is. Where would you draw the line? More specifically where would you draw the line? How would you describe it if it was your solicitation?

*Art*

Well, it would be technology or a project that has been demonstrated but it isn't commercial yet and there is additional work that can be done to get it to commercialization stage. I'm wondering if that would meet the criteria or the objective of this proposal?

*Michael Eastman (DOE)*

If I'm hearing you, you're suggesting that the solicitation enable the inclusion of technologies that need some form of activity to bring them to the point of commercial readiness.

*Art*

Right, even if they have been demonstrated?

*Michael Eastman (DOE)*

Correct. You don't look happy.

Well, it's yeah. It's just the question. We're not going to be able to give you a definitive answer to these kinds of questions. The ability to which we have understood and can comply will be hopefully evident when the solicitation draft comes out. And of course then there is the opportunity to comment on that draft solicitation in the January time frame. Our intent here is to really understand what people have in mind so that that draft solicitation can be very close to on the mark.

One of the things I would ask is "are there others in the audience that feel one way or the other on that subject?"

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*Robert Hoppe (WMPI)*

As you may or may not know we are involved right now with the DOE cooperative agreement as it relates to an early entrance co-production plant and that project involves the preliminary engineering process design, and preliminary finance work to construct a facility that will produce 5,000 barrels of ultra-clean Fischer-Tropes diesel fuel, as well as produce electricity. How would a co-production project fit into your round one objective right now since under HR4, co-production is one of the project criteria I believe?"

*Michael Eastman (DOE)*

I can shed a little bit of light. HR4 is a passed bill in the House and is not really representative of a legislative mandate for the department. As part of what your objectives are in the CCPI program, it deals with the National Energy Initiative/Program that the administration has laid down. HR4 is the backbone of that initiative. Again, all I can comment on is what has been passed to the department through the appropriations bill for this particular chunk of money, the \$150 million and it has certain prescriptions relative to it.

*Robert Hoppe (WMPI)*

Does co-production fit into that criteria then under the 2002 Interior Appropriation Bill?

*Michael Eastman (DOE)*

Right and what I would ask you to do is similar with what I did with Art was to characterize for us how you would feel the solicitation should be structured in order to accommodate your interest in co-production.

*Robert Hoppe (WMPI)*

Our company would like co-production as one of the criteria that is reviewed during that round one objective, not only the modernization of the existing fleet of aging power plants, co-production specifically dealing with fuels and electricity.

*Michael Eastman (DOE)*

How would you make that split?

*Robert Hoppe (WMPI)*

Right now, it's my understanding under the interior appropriations bill that was passed out of conference committee, that there is no specific requirement dealing with the production of electricity. I would ask that the split be considered based upon the proposal. And there not be any specific criteria up front.

*Michael Eastman (DOE)*

You mean that no electricity could be produced, would necessarily have to be produced?

*Robert Hoppe (WMPI)*

No, I didn't say that.

*Michael Eastman (DOE)*

That's what I'm asking you.

*Robert Hoppe (WMPI)*

No, co-production is co-production. I would think some electricity would have to be produced just to meet the definition of the term.

*Michael Eastman (DOE)*

So your definition would be a co-production meaning co-production of fuels and electric power as opposed to co-production of fuels and other chemicals? Is in your definition?

*Robert Hoppe (WMPI)*

Right.

*Michael Eastman (DOE)*

Thank you Bob.

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*Gary Anselmo (Silverado Gold Mine)*

My name is Gary Anselmo, Silverado Gold & Silverado Green Field. I do not have much to add to what the gentlemen have said, the first two speakers, but I want to support, even stronger, to let you know how many people are in this audience that are caught up in the language of the applications. We applied with a new fuel, a replacement for crude oil burning, for increase of industrial heat, utility electricity. It's a low rank coal water fuel. It's not unknown. It's been tested; it's been proven in various countries. It does not go up against the coal industry but as I say it is a substitute for burning crude oil for these purposes. Coal generation of electricity certainly can be part of the project very easily. We are from Alaska. We have end users in Alaska that we may well be able to replace their current source of fuel for electricity at a cheaper cost. But I just wanted to add additionally what we just heard from the prior two gentlemen, now you've got three for three in this audience and probably more that are very concerned with how to apply to bring possibly new fields to bear in the marketplace but have a fear of going in under just the matter of creating a new fuel, how to apply, what language to use.

*Michael Eastman (DOE)*

Could you characterize for me, a little bit, the kind of project that you would picture in your mind that you would like to put forward under this solicitation?

*Gary Anselmo (Silverado Gold Mine)*

Yes. We did apply under the power plant improvement initiative. It's about a \$15 million project and we're looking for a match-up with the DOE. And of course, we were not a power plant. What we have done just ten minutes out of Fairbanks, Alaska, have taken one of our gold mills that we mothballed in 1992 and rather than building a \$40 million plant to produce this fuel, we can do it for about \$15 million by adapting our current mill. This ties in with University of Alaska, Fairbanks, and their project to run through the DOE grant, run the new fuel through its generators. We tie in with Eastobelli Coal, the producer of the relevant coal who have offered to give the coal to the project. So it's a demonstration project. It has been proven worldwide and certainly we can supplant their application with those cases. A demo project to not just do the things I've just mentioned but also to bring other countries coals to bear, to treat them, to see if indeed their coals will make the energy economically, and we find from our studies that we're looking to replace a barrel of oil at about \$14 in North America. It's about \$8 in Asia. So the demo project is a very necessary step. I might say there is no real magic to this process. It's just the world has used bituminous coal, high energy, low water for transportation, low cost and turned away from low rank coal. But with the new implementation of the new laws for environmental concerns, this is an environmentally friendly, low cost energy and it seems almost as if it's a new power source. It's not been put forth before.

*Michael Eastman (DOE)*

Let me just clarify your suggestion or your outline is of a project that would be the production of certain quantities of a new fuel form and would it include the performance testing and evaluation in power plants. Is that the scope of the project that you would suggest?

*Gary Anselmo (Silverado Gold Mine)*

Yes, I would say yes.

*Michael Eastman (DOE)*

Great. Thank you.

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*Shyam Dighe (Westinghouse Plasma Corporation)*

I have a two-part suggestion. First is in line with the first person that came to the microphone, Art, I believe. The differentiation between the Timon Station project and the commercial projects. What we would like to see is even commercially demonstrated projects in other countries. We allowed to be part of this solicitation. Although they have not been commercially demonstrated on coal but like the renewable energies like

MSW, solid waste, garbage, etc, and the second part of the solution is to include a criteria that addresses a major issue, like your agreement. I think the renewable portion of the energy source should be a criteria that could be used to evaluate projects. Although, I understand our country still hasn't signed the Kyoto agreement and rightfully so. But besides they should, there are other countries that are addressing this, Europe, Japan, and if the power plant could have a coal field of biomass or maybe even MSW, that criteria could be used to enhance acceptance of the U.S. energy policies all over the world. I think it will go a long way to address the Kyoto issues. Thank you.

*Michael Eastman (DOE)*

Thank you Sean. I want to do one thing to check on the logistics. Scott can you confirm that we are actually getting this on tape and everything working. Okay great. Yes.

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*Randall Rush (Southern Company)*

I have a question and depending on how you respond to the question, I will have a follow up question. The phrase at the end there "with the goal of modernization of the existing fleet of power plants" where did that come from and what do you mean by that? I came a little late and I apologize if this question has already been asked.

*Michael Eastman (DOE)*

Randall we are trying to address that but the answer that I had given was that it was not our intention to make the scope limiting and essentially exclude technologies that would not be as say retrofit on an existing power plant. This was intended to be a thrust. I reflected it back to the audience saying that if your expectations and needs are different what clarifications or what directions would you like to see in the solicitation to accommodate the kind of a project that you see putting forward.

*Randall Rush (Southern Company)*

Okay and I apologize for being redundant with what you did before but the way I read that is the focus is on retrofittable technology. I'm trying to understand why you guys came to that conclusion. Where did that come from?

*Michael Eastman (DOE)*

I think your reading too much into it. You're reading it too hard Randall.

*Randall Rush (Southern Company)*

Okay.

*Michael Eastman (DOE)*

And unless there is an overwhelming flood of people jumping up and saying "no that's what we want", I think the intent here is the aging power plant fleet not the aging power plants I think is the way to look at it so you can improve the breed by bringing in new plants or additional technologies and not just looking at the existing plants themselves. Don't read it too hard.

I think the emphasis was intended to be on the near-term. That these were intended to have near-term impact and that was really the thrust of why things were perhaps coming out this way on that PowerPoint slide if you will because we wanted to make sure that the investment and the focus in this first round would have “impact in the near-term” the existing fleet whether it’s a new plant or a retrofit.

*Randall Rush (Southern Company)*

Okay if your intention is near-term there might be a more direct way to say that.

*Michael Eastman (DOE)*

Yes.

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*Marshall*

Well I would have been here on time but Randall held us all up. All kidding aside we were engaged in another meeting. And I apologize if this question has also been asked. The discussion I’ve heard so far, we have discussed building new plants. And that’s fine. Are you intentionally envisioning not dealing with component upgrades as opposed to the whole new plant concept?

*Michael Eastman (DOE)*

Again I’m going to have to reflect this back to you. Don’t leave the mike. The burden is back on you to explain what your expectations and needs would be relative to a solicitation that you would feel you could respond to and yet offer something within the scope of the way you understand the CCPI intended. So if there is something you would want to see in the solicitation to leave the door open, clarify for us what that is so we understand that. You’re talking component development but you talk about what type of project.

*Marshall*

One could, for instance take it one of the priority pollutants and come up with some upgrade or new concept to address that priority pollutant and that would be a much more limiting project than one which one up with a whole new power plant. I’m really, I ain’t got no dog in this race, at least at this point. The question is have you guys sorted out in your own heads or are you really just throwing it out to us to make recommendations as to what ought to be done?

*Michael Eastman (DOE)*

We’re really throwing it out to you to make recommendations. Putting it in any kind of real short sentence how do we use this opportunity to improve the production, the use of coal in this country with the acknowledgement that the primary use of that coal is in the production of electricity. In looking at what we currently have and what we know is going to come down the line. So what would you have us include in that context?

Really, the Genesis is focused on the competitiveness of coal. If one thing we've heard the last day and a half here it is concerns about coal and it being part of this country's energy mix. Technology is viewed to be a device by which we insure that coal is a player. This is an opportunity. The only other thing it's a demonstration scale. Commercial readiness is a theme improvement in the performance of coal in making electric power is certainly within that context. I think that what we're searching for is how people interpret that and what they would expect to see in a solicitation so that their ideas could be viewed as competitive.

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*Glenn England (GE EERC)*

I think I heard you say modernizing the existing fleet wasn't meant to exclude anything. So I could interpret that to mean repowering as well or did you have something else in mind? If I make that assumption I guess my suggestion would be the evaluation criteria don't seem to reflect some of the objectives you might expect for heat rate improvement or utilization of domestic energy resources. I suppose that's imbedded in the coal program anyway. If you are specifically looking at getting performance impacts out of this as well you might include a criteria to reflect improvement of heat rate or reduction of O&M costs. The other comment on environmental performance and benefits I assume that as you develop the solicitation those will get more specific but my recommendation would be to make them more specific. Do you want to grow trees in the rain forest? Or do you want to reduce PM2.5 or NOx and Sox, etc. Mercury.

*Michael Eastman (DOE)*

Well let me ask this-if you were writing this what kind of specifics would you include?

*Glenn England (GE EERC)*

Well I guess looking at getting a few more years out of the fleets with pending 3P rules coming down the line and PM2.5 regs maybe earlier than 2012 as some have suggested, you might want to focus on some of those regulatory issues that are a bit further down the road. You wouldn't want to put all this money if you have a demo program that is completed in three years and the rest of the market picks up and employs those technologies there'll be a five to ten year time frame that this program would have it's best impact. And so you'd probably want to make the environmental benefits reflect the forthcoming regulations.

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*Phil Amick (Global Energy)*

I read the CCPI text I saw in there specific heat rate and environmental goals for up to 2010 and 2020 and I see that as being kind of inconsistent with what we're looking at as a near-term fix as it's been explained.

*Michael Eastman (DOE)*

Excuse me I need to ask a clarifying question. When you say the CCPI text, what?



*Phil Amick (Global Energy)*

I mean the HR4. And I don't see the paragraph as written there as being consistent as I read that or consistent with the Vision 21 goals of reaching the emission-free power plant. So I guess I'm thinking when I read HR4 it's not modernizing the existing fleet but it's creating a new fleet of clean coal plants. I don't have a question.

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*Bill Ellison (Power Magazine)*

One thought that might be helpful to you- the IEA coal research just issued a profound new manual named "The Aging of Power Plants" and it drives home the idea that a unit continues to operate until it no longer can be justified in its operation. So that one way of modernizing the fleet is just the opposite of the way many in the audience are taking it. You bring along new technologies that make it impossible to continue to operate an old plant in favor of building a new one. So that's the twist that I think you're trying to respond with.

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*Wayne Brown*

Wayne Brown representing several entities in Southeastern West Virginia. The Appalachian Transportation Institute and the Meadow River Enterprises to name two. We are interested in a rather complex project that's called the Ecopark we're trying to one the one hand trying to do something with hundreds of millions of tons of coal waste in the southern part of West Virginia. These are mine tailings that represent good fuel to the right clean coal unit while at the same time building a new manufacturing infrastructure. Our present view of that is that ultimately we need maybe a thousand megawatts of generating capacity to consume all that waste in any reasonable period of time and that the technology to do that will most likely be the circulating, pressurized fluidized bed combustion system as the particular technology and then perhaps at some point go a little further than that in terms of cleanup, but that basic technology. And that given the present state of that technology it would be sensible to build a fifty-megawatt unit but not a three hundred-megawatt unit. So what we are hoping to propose the first Ecopark somewhere in southeastern West Virginia that would have the fifty megawatt unit and would demonstrate the feasibility of constructing industrial partners around that central power plant as kind of the first tenant in the park that is a co-generation situation where the park members consume some of but not all of the power and perhaps most of it is exported. Even at the fifty-megawatt level. And that all the critical unknowns here from a commercialization point of view, the hot gas filters, and perhaps even a new approach to hydraulic compression to get the air as a combustor would be demonstrated setting the stage a few years later for multiple such parks with much larger power generation capability. Such that over say a ten year time frame we would spring from this initial demonstration to the fuller commercialization in the southeastern part of the state and the creation of a lot of jobs and ultimately the clean up of all that waste. That's what we want to do. Now at this flash in time we think we have the political players, the

economic players, the industrial players that can actually make this happen for the fifty-megawatt class. I mean we don't have the financial resources to deal with the risk that would go with the hundred or two hundred-megawatt but we can deal with the fifty. So what we're hoping is that you will anticipate that sort of evolutionary growth from assuming now that you would agree that is the right technology. That it's got to be proven at a scale that is commercial but not any larger than it needs to be until the risk is reduced. And that would be followed immediately by a more wide spread utilization of the technology in the larger plants and over a ten to fifteen year period we can make a dramatic shift in that part of West Virginia and have in place new generation capacity in excess of a thousand megawatts.

*Michael Eastman (DOE)*

Let me ask you a follow up about the kind of project you would like to see be able to be supported. But it raises a question that it might be helpful for the others to hear what your thoughts would be as you put this project together and that is you described a fairly broad project that has a technology power compound as a part of it. Yet could you clarify for us what your intent would be in terms as to what you would propose to the Department in terms of a project and what you would be seeking cost share for – a portion of the project, all of the project, how do you see that?

*Wayne Brown*

Well basically we see the industrial park element of it as being a separate project that the State of West Virginia would play a major role in doing it. Probably it would be a separate limit of Liability Corporation in it's own right. The power plant would be cost sharing between the Department of Energy and the private parties where that cost share would be set to make the fifty megawatt level commercially feasible in the sense that it would be running at some modest net profit level. But that cost share would be substantial. I mean maybe we're talking about half, I don't know what the right ratio is but it is something in the fifty/fifty kind of neighborhood would be our perception of it today. Now I don't know whether that's if when the cost analysis is all done whether that is right or wrong but that initially appears to be feasible and we think the environmental cleanup has substantial dollar value in it as well so that's a part of the game. But because it involves all of these parties from the Environmental Protection Agency, to the state economic development folks, the list goes on, the complexity of it is high. And there are only certain flashes in time when all the parties are aligned in such a way that it's feasible to do something like that. We think that is indeed the case right now in West Virginia and we're anxious to take advantage of it.

*Michael Eastman (DOE)*

Thank you

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*David Bayless (Ohio University)*

I'd like to kind of comment with regards to some of the comments of the previous speaker and some of the initial speakers regarding co-production and co-generation. We

would strongly advocate that the Department of Energy and the CCPI consider looking at not only at large scale power plants but to consider coal in what we would consider larger distributed type co-generation facilities. Coal faces some serious disadvantage at more or less larger distributed level compared to natural gas and we think the CCPI would be an excellent venue to address some of these issues. We believe that these small scaled to fifty megawatt, thirty megawatt, twenty megawatt, particularly co-gen or even co-production type facilities offer numerous advantages from thermal utilization point of view because the steam can be used as the waste heat is utilized, it also offers a chance for issues such as minimizing line losses and even security issues when you're dealing with having reliable power, not being able to be susceptible to more or less threats that would take out the distribution lines or such. We believe that coal could penetrate into that market but it will take some help from the federal government to address that area because natural gas is currently dominating this type of application right now. Thank you.

*Michael Eastman (DOE)*

Can I ask a question? Both you and the gentleman before you what I am hearing is that you are recommending that the solicitation include the opportunity for projects which in and of themselves don't represent a commercially scaled project but do demonstrate the technology for scale up in a future scenario. Am I hearing that correctly or not?

*David Bayless (Ohio University)*

Well from my point of view no. I would say the commercial viability is to use coal in the 30, 40, 50 megawatt range in the co-generation applications that it is a future road for coal utilization and probably one that's when in the era of deregulation is something that should be strongly considered because I don't know how many people are going to actually go out and build thousand megawatt power plants.

*Michael Eastman (DOE)*

Let me restate it. What I hear you saying is that the solicitation should be structured to consider I'll call them small versus a hundred and fifty-megawatt power plant demonstrations. You're talking about small thirty/fifty megawatts...

*David Bayless (Ohio University)*

Right, I call them large distributed

*Michael Eastman (DOE)*

Okay something like Abbey was talking about this morning. But in the context that they would be commercially viable in and of themselves at that scale.

*David Bayless (Ohio University)*

That is correct.

Unheard from someone not near a recorder

*David Bayless (Ohio University)*

Yes I agree with that comment. That the first one would probably not be commercially viable because of the integration of the technologies and such at the initial stages. But it would eventually be directed toward commercial viability.

*Michael Eastman (DOE)*

I think the point here is and let me clarify this that there isn't any confusion that the thrust of the program whatever it is is a demonstration program and by its nature is taking technology from where it is in investing in it in a shared manner to bring it to a point where it would then be commercially ready. So there is some aspect to it that requires this shared investment, otherwise why a federal investment. I think that's the thrust regardless of how we slice up the scoping that particular thrust is what we're talking about. There's a question over here that I haven't gotten to.

We have several bullets to get through and we seem to be on the first bullet but I suspect that was a significant issue. But I would like to make sure we touch on them all.

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*Joe Darguzas (Enviropower)*

I would actually like to pick up on a flash of time that our colleague from West Virginia talked about. But first let me react to something that I heard you say about "we want to do things now that will increase the use of coal now". I'd like to reflect on something we heard at lunch from the General that now is the time to do things. We've heard through this whole conference that we need to do things now. Maybe you're gonna get where I'm going here. But let me talk about schedules first. If I understood the schedule you laid out this morning it would be some time next year before funds would start to flow and that presumes that the Nepa review that could take up to as much as a year to do would not take up to a year to do. We heard that a large coal-fired plant is going to take three to four years to build. If you do the arithmetic that means it's six years from now before whatever it is we do here today is viable in a living thing. In this region of the country and in the midwest baseload generation will be short some time in the year 2005. Gas will fill that void. The industry and the economy will not let that void sit open. If we put forth a program here that six years to come to fruition gas will be there, fill the void and we'll be back here again saying "what do we need to do to get this program going again". My suggestion is that similar to my home state of Illinois where you do have appropriations established as we do here that the department consider a rolling release, a rolling award of projects that are good to go. I understand that some people aren't quite ready yet. Okay but at least let's have a staggered program where if you are good to go, if there is that flash of time, we can take advantage of it.

*Michael Eastman (DOE)*

Thank you Joe. I will just point out that Joe is referring to the schedule that I presented this morning. I flashed it back up here. But some of the response that we got from the last stakeholders meeting was to assure that we allowed sufficient time for the proposal preparation process to accommodate the formulation of complex teams and complex

financing. That brings up a subject I'd like to talk about would be this concept of what do we require as part of the proposals and I think it really bears on some of what the up front work is that must be done by the proposers and I'd like to get to that and talk about that. But I appreciate the comment about the rolling opportunity.

Is there an objection if I move from the general area of scoping into drilling down a little more on the structure of the upcoming solicitation? Anyone else have a scoping comment that they want to make sure we get? Okay.

I don't think there's an issue here but I did want to point this out in terms of what the plan is and the way the schedule that was put together builds and that is that we have \$150 million in appropriations for '02 and certain guidance to pursue a schedule and so forth and that's what's driving us. The portfolio of projects that we would ultimately select is going to be proposed that we based on an anticipated availability of federal funding in the order of three to four hundred million that picks up some remainder funds from the power plant improvement initiative and anticipates the '03 funding and the selection and awards would be in the '03 period and that is the going forward view that we have on that subject and it does bear on a timing issue. There is a larger opportunity but then it takes a little longer to harvest that. But the one I wanted to talk about is the project definition phase concept and it bears on the level of development a project is going to have in order to be competitive and what we require in our solicitation. And I would really like, on behalf of the department, is to hear what the prospective proposers and project participants have in mind relative to the concept of a project definition phase. Things we tend to focus on are the project financing on the one hand and then the site commitment availability. I don't think it does good for the project to go site hopping around the country and have projects that aren't able to pursue what there intended mission was when the idea was the project definition phase was a way to achieve some balance in that respect. But we would appreciate comments from folks relative to their expectations on site commitments, particularly with respect to what should be required as part of the proposal, prior to award and then what may be required before the end of say this concept of the project definition phase and how you see that in your mind.

Does someone want to be first?

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*John Marion (Alstrom Power)*

A couple of comments. If I think of the opportunity here for time and some project funding to complete financing that seems logical. But it would be my recommendation that a credible financing package be part of the bid. In other words letters of intent from entities that would represent a high probability that the project would go to completion. With regards to the opportunity to comment without a host site I would hope that those projects that did have a host site would have a much higher weight in in terms of their selection. And if I think back to the experience of the clean coal technology program and I think this was actually articulated in the CPPI program, there were situations where projects had a soft host site agreement and went on a fishing trip, and quite a few years,

like five more years or later, popped out with a host site at a time when technology might have not needed the same kind of support. I would advocate that there be some care given to how much flexibility these two points are given so that you come in with truly good, solid projects. As a point of emphasis, if you're really looking for good projects that will catalyze the deployment of technology, they need to be done at scales that comezorate for such demonstration. Therefore the burden on industry is quite significant. The funding levels are significant. And the ability to have that at the time of the proposal I think is going to be evidence of the quality of the project and the meaningfulness of the project. I think some care should be given on these two points.

I'd like to ask you a follow up that's not really on this chart but is part of the issue of project definition. And that's the issue of say design, testing, verification, proof of design concept for the proposed project. Something of the more experimental nature as part of the project definition phase and whether you see any value in that or not.

*Michael Eastman (DOE)*

As a personal opinion in a response to the question my personnel hope is that these funds go to the deployment of first of kind technology that is ready for demonstration. That implies that a significant developmental effort is complete. And the evidence is made in the proposal that those actions are in fact complete. However, I can imagine in a design phase there may be some limited experiments, perhaps for the specific coal, or the specific additive that would be necessary in the design phase before the final demonstration design is concluded. Those seem to be consistent with the design phase but you're opening a Pandora's box if all of a sudden this tremendous opportunity the DOE has to support the deployment of first of kind technology is in fact used as the R&D budget. I think we need a strong R&D budget in addition to this program.

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*Randall Rush (Southern Company)*

Just to say something slightly different than John said, I think, at least from our opinion, the proposal has to have a host site, period. Up to experimental work but one other comment related to design. It's been a while since I was involved in one of these. We were involved in some of the early clean coal programs and what I recall you may have evolved past this was that during the IA process if a participant chose.

The experimental work but one other comment related to design, it's been a while since I was involved in one of these. We were involved in some of the early clean coal programs, and what I recall and you may have evolved past this, was that during the IA process, if a participant chose to begin design they we at their own risk that the IA process would go forward. In other words, that you'd pass that and the project wouldn't fail for some environmental approach. It seems to me that at least some percentage of design, 20%, 25%, DOE ought to be willing to say up front, "as you're going through the IA process, we're committing to this part and when you go beyond that percentage you're on your own if we fail the EI test. Because if, getting back to what someone said earlier,

if you want these things to start up earlier the sooner you let people start designing without being at their own risk, the more likely you are to start up sooner instead of later.

*Michael Eastman (DOE)*

More comments on project definition phase, the value of such a concept within a solicitation? Is it important to project developers for this option or does it present weaknesses that you feel hurt the program? I would like to know what you feel about that.

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*Barry Halper (Air Products)*

With regard to host site, although I believe that it was necessary to have one identified, I think one of the strengths that DOE has brought to the clean coal program over the years, has been a sense of patients that it has shown where a project being selected with an initial host site and then during a project definition phase, finding that there are certain problems, restrictions, whatever at the initial host site, DOE has been very tolerant and patient to allow these projects to seek an alternate host site. And we have some very good projects out there that are now functioning that had there been too rigorous a site, host site situation up front, I would have never gotten to that point. So not that you want to have some of the projects going at an infinite item to find a site but there needs to be that sense of flexibility where it's necessary. Also, with regard to project definition phase, given the fact that there is a significant amount of uncertainty with regard to the work that has to be done, I would advocate that there would be an amount of whether you want to call it R&D or verification, I think that should be allowed. And also, again, because it's a tremendous uncertainty that perhaps at least at that point the cost share may not be 50/50 but maybe 80/20 on the part of DOE and then the participant, with obviously the overall program coming up to at least 50/50, so that when you got into the next phase that the ratio would have to be such that eventually it would become to a 50/50 DOE participant.

*Michael Eastman (DOE)*

Thank you Barry. Any more needs, expectations out there with respect to project definition? Okay. I'd like to move down to this bullet here and discuss what the intent of this was and that is to include, and typically we include in the solicitation some expectation with respect to how much money is available and the number of awards we would anticipate making, and how we choose to phrase that often sends signals to people as to what the target is, what the desire is, or what the competition might be, or their chances for receiving an award. What we suggested here was a possibility where we could say something fairly specific that might suggest that larger projects are definitely of interest as opposed to saying something like "well, we'd expect to make two dozen awards from this particular solicitation". How do people feel about what their, if their working on a project, what kind of a signal would they want from the department and why. It's funny. We wrestle with this question all the time and I would figure there'd be a line behind the microphone saying "this is what we want DOE to do". We must be sweating over margins.

*Unnamed Gentleman*

What do you mean by larger awards?

*Michael Eastman (DOE)*

Here we go. I think in recognition that we're saying there's three to four hundred million dollars of federal funding that could be levered against a project, and we go out there and say "okay, that money's available and we would expect to make two or more awards or at least two dozen awards." I think it sends a different kind of a signal. So in this case, if it were to come out say in this fashion, there would be signal that would say that the department is not excluding the idea that some large projects that could conceivably use large chunks of this money would not be thrown out for programmatic or other reasons. That's kind of the intent of if it came out that way.

*Unnamed Gentleman*

How does the department plan to tie in this CCPI program with what is being discussed and debated in Congress right now, relative to the national energy policy CCPI program?

I think I'm going to have to do my reflective listening mode here and get suggestions, issues, or recommendations from you as to what the department should do. Because the funds available, as you know under HR4, which eventually is going to be reconciled with the Senate version, totals approximately two billion dollars over ten years and I would think there'd be some continuation of the criteria of what you're talking about now in terms of the CCPI program, with what the House has envisioned in HR4. If you're asking for a recommendation, that would be my recommendation.

*Michael Eastman (DOE)*

Okay, I just need to clarify that HR4 included an incentives package that had a value of something on the order of three or 3.3 billion dollars for deployments. And that was a large part of the message of HR4. Is that the part you're talking about?

*Unnamed Gentleman*

I'm talking about section 5000 of HR4, which is specifically entitled "The Clean Coal Research Component" which has an appropriation or an authorization for an appropriation of two billion dollars.

*Michael Eastman (DOE)*

Okay you're point's made. My comment is that the department is certainly expecting that CCPI will be a multi-year program approaching a couple of billion dollars over this ten year period following what the NEP prescription for clean coal technologies is. And this would be the first along that path.



*Unnamed Gentleman*

Is it possible to dovetail some type of mortgage payment for a project over several years then that would encompass not only this appropriation of four hundred million but then tie it in to the national energy policy?

*Michael Eastman (DOE)*

Okay, again what I would reflect back to you is if that is something that would be advantageous to the community to express that and what your desires and expectations would be relative to say an authorization and availability of funds and so forth.

*Unnamed Gentleman*

I notice this gentleman over here shaking his head no when I asked the question and

Other gentleman

He gave the right answer.

*Michael Eastman (DOE)*

Thank you very much. Well let's see. Okay, how about repayment? Let me just cover what we're thinking about based on things that we've heard and we were kind of looking for some reaction to this strategy showing up in the solicitation. It is a new wrinkle. The appropriations actually suggest that the department have some flexibility with respect to repayment that we have not had in the past. One that would be more proposer focused on proposers ability or basic plan to come back to the department and then we would score that against some set of criteria, coming up with some strengths and weaknesses comparisons or whatever. Based on another concept where we might forgive a repayment obligation should there be cost sharing on the order of 75% or more, given credit essentially for their present value of the additional cost shares opposed to waiting for recovery through some extended commercialization and repayment scheme. Then that would be in some sliding scale, would be ratcheted back to a more traditional full cost recovery, if you would, for the government cost share if the private sector cost share was more on the order of 50%. We're wondering if any of the community out there sees this much ado about nothing, or is this a strategy that actually finds some support out there.

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*Unnamed Gentleman*

It would seem to me that risk has everything to do with how that's handled. In the particular situation that we're in it seems to me that the risk judgement, the proposal, will describe a perception of risk. That risk is the perception of it is not being driven just by the experience necessarily the proposers but it's risk that's being driven by the Department of Energy's perceptions of it as well. I would suggest that that somehow be factored into the repayment. If the risks end up being as expected by all of the parties, then you've got one repayment situation. If, on the other hand, there's a big surprise that nobody anticipated that effects the ability to repay, then the rules would shift. I don't know exactly how one would mechanize that, but the risk is a big factor.

*Michael Eastman (DOE)*

One other comment I'd like to make about this repayment issue, on the one hand more cost share up front and a forgiving of the repayment essentially reduces the burden on subsequent commercialization which is really the motivation of the program. That is to get technology out there in wide spread utilization. So cutting back a future repayment risk actually enables, takes away a potential limitation for commercialization. On the other hand, it generates additional cost burden if you will on the demonstration itself and perhaps causing it to have more inherent risk from the private sector's point of view that it might otherwise have. You like the 75% scenario or not?

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*Andrew Paterson (Environmental Business International)*

Yeah, I think if anything, you're a little too cautious with this radical departure from previous solicitations. We talk to a lot of engineering firms, investment firms, and states on all these energy project development issues and we do some analysis for DOE. I was at the September 28<sup>th</sup> workshop as well and I think some of the thinking that we advanced at that session, I know Tom was facilitating that session, did a great job of pulling some of the comments together. The thing that is of interest now is DOE is really bringing an interesting layer of capital in a much more market driven environment than eight years ago. In the sense that you essentially are bringing venture capital with no equity hurdle rate, if you're willing to forego the repayment, which to me is a radical slayer of financing in today's day and age. So I would whole-heartedly support the proposer based less scripted by DOE approach but I would say go farther. I would call it innovative financial assistance provision in a solicitation. We kicked around some ideas in our breakout group that have to do more with moving away from financial assistance and loans to actually maybe calling it convertible equity, where you would get an interest in the project that could be traded later or converted into the typical financial assistance agreement. I mean that's a radical departure. There are some precedence for it. If that's too radical, or if there are provisions not allowing that, you could play with warrants as a part of the project. You could do a partial power purchase agreement as a form of placing the financing. In other words, be an anchor tenant as an off-taker, which then could be traded. Take 10% of the first three years electricity sales as a way of guaranteeing a layer of electricity sales out of the project. Do the same thing with CO<sub>2</sub> credits to the degree they're generated through higher efficiency. Explore interest rates subsidies as another form of providing financial assistance. Some have, back in the early ninety's there was talk about limited performance guarantees, say just for the first five years of the project, or for a certain technical parameters of the project, whereby the government is forming a risk pool across a number of projects. There are more. What's interesting to us is you're calling for multiple designs in the CCPI solicitation but there seems to be one design for the financial engineering. I salute you for coming away from just doing an R&D demonstration grant but I guess the input is there are many more flavors to play with because of the market environment that we are now in. The outcome of that then is you could get five to one leverage, you could get twenty to one leverage on some of these projects in the case of a limited performance guarantee, where the project

works and frankly you're not having to put much funding up. The reason I think that is important right now is because we have seen that clean coal funding can go away. There's a promise of two billion over ten years but there is no guarantee. Frankly, four years from now the program is going to be looked at by maybe a new mix of Congress, who knows? And so there's going to be a real benchmark set out there for leverage and cost share that maybe you're not anticipating right now. So anyway, I think in summary, an innovative financial assistance provision in the solicitation would be good. I think the credibility of the financing with what John was talking about from Alstrom, needs to be weighed against the potential leverage. There should be allowed to have a range of leverage put in the proposal. In other words, an initial range of cost share but then a provisional range saying if we don't call them on the guarantee or if our performance is better than we expected then we may enter a forgiveness zone. So there should be allowed a range of leverage in the proposal, not one number. And then the last thing I would echo that we had in our breakout session in September was maybe have a tiered proposal channel, whereby you have smaller, higher technology risk projects that aren't compared to the larger, more assured projects that have a higher likelihood of generating electricity. The smaller projects, frankly, shouldn't be compared with those. They aren't going to be structured technically the same and frankly they shouldn't be structured financially the same. The benefit the DOE is then you help build a broader portfolio of projects and a pipeline for future solicitations. So I think there are even more things you can do under this repayment provision. In fact, don't even call it repayment. Just call it innovative financial assistance.

*Michael Eastman (DOE)*

Thank you Andy.

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*David Bayless (Ohio University)*

Out of curiosity, if you're going to be scoring repayment, what would be the implications if the technology developer or co-utility or whatever, only bears a small portion of the cost share and most of the cost share is borne by the public institution where the site would be located? What would be the repayment obligations in that scenario?

*Michael Eastman (DOE)*

Did you want to suggest something? It been suggested in light of the political reality of public funds and public funds being mixed.

*David Bayless (Ohio University)*

I wish I could say that my best suggestion is the public institution, not have to deal directly with a cash repayment. But I do like the flexibility that the options that were presented before about demonstrating credits for certain things, the carbon emissions was one that was brought up. Some other related ideas but to be honest I couldn't give you a very solid suggestion. I was just wondering what your thoughts on the matter might be or if DOE had given any thought to the matter.

*Michael Eastman (DOE)*

I have one reaction and certainly that there is pressure as to what the proper federal role is in this kind of activity and to insure that industry does it's fair share or more and that government isn't necessarily leading but following industry's direction. So in the particular case that you describe, I think the real challenge would be to demonstrate that industry is doing just that in the context of that proposal. That would be the principal challenge that I think would confront the proposer.

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*Art*

Mike, in this case you defined repayment in terms of, or let me put it this way, you defined an additional reward that DOE would offer under this program in terms of a reduced repayment amount in exchange for a higher cost share by the project participant.

*Michael Eastman (DOE)*

Correct

*Art*

I had submitted a comment earlier that said that reward for these projects should be based on the level of risk that the project participant undertakes. My point is that some projects obviously are riskier than others. I guess what I'm getting at is instead of looking at the DOE reward in terms of repayment, perhaps you could look at it in terms of the amount of risk associated with a particular project. Is there a way to, my comment would be perhaps to rank projects based on risk and then define the level of award based on that risk.

*Michael Eastman (DOE)*

Art, let me just clarify to make sure that I understand. You're suggesting that say a project that might extend the state-of-the-art several orders of magnitude, let's say, and hence carry an intendent risk, be evaluated differently so that the amount of federal monies put toward that project might be effected by that risk versus a project that was looking more at an incremental improvement of current state-of-the-art.

*Art*

Correct

*Michael Eastman (DOE)*

And somehow provide, are you suggesting that proposers be rewarded for taking additional risk?

*Art*

Correct. I'm suggesting proposers be rewarded and perhaps as you described it here, this doesn't really address that fact that some projects are riskier than other projects.

*Michael Eastman (DOE)*

I guess I'm receiving that comment similarly to the one that preceded yours, and that is that there is some way of allocating federal support dependant upon how much risk is imbedded in the project and what would be an appropriate position for the government to take relative to that risk. And you're taking another step forward suggesting that if the private sector is willing to put together a project that is "riskier" that they somehow receive credit or benefit from the government with respect to that proposal.

*Art*

Correct. And is there a way, I guess my comment was perhaps in the solicitation you could develop a risk ranking criteria.

*Michael Eastman (DOE)*

So we would have to tell you that up front. That's the tough part. We don't mind doing it but we're not going to tell you about it.

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*Unnamed Gentleman*

Can I ramble a minute, reflecting on what you just said? What I heard you say was that riskier private projects would receive more government money, in a nutshell. And that the projects that are less risky would receive less funding percentagewise or something on that basis. That shapes the nature of the solicitation to, or does it shape the nature of the solicitation to put more higher risk projects on the ground?

Speaker not near microphone-could not hear comments

*Michael Eastman (DOE)*

Okay thank you. Maybe just to put a cap on this, I mean one thing that I'm hearing is that there would be an opportunity to perform some kind of a cost benefit as part of the evaluation benefit being associated with let's say higher risk, bigger potential return, and how much money is being asked for of the government to achieve that bigger benefit so that cost benefit analysis might shift you toward just what Ken suggested is a higher risk portfolio because of the nature of the order of magnitude better higher benefits and try to put that into the selection criteria. Okay Art, thanks. In the back we have a couple.

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*Bob Giglio (Foster Wheeler)*

I would like to comment that's a good point to pick up because our experience has been the real risk of doing these projects is not the cost of the project, not figuring out how much it cost to build it and get the thing running to a certain, well I'll just say build it to a point where it's ready to run. The real risk is saying will it run and to what level will it run to. And when you look at that equation, that risk equation, it's really, you're asking a utility or a commercial entity to put his money on the line for some project that's going to give him a return. Now unfortunately, in today's world, deregulation makes every

investor try to protect his money. Very, very much so. So from our perspective, we can come very close to knowing what it will cost to build a project and guarantee that price to the client. But then the client will say to us “okay, fine, let’s do that. I’ll take half the DOE money and I’ll build this project for very much below the cost of what it would cost normally.” But then they’ll ask the technology holder, like Foster-Wheeler or Alstrom or anyone else doing the project, okay now guarantee your project. Just by the whole nature of this project being demonstration, the key is we can’t guarantee it with comfort. We have nothing to refer to. So that’s the risk. So from our point of view, we would rather see the money, some of the money being set aside just to cover the risk of will it work or not as far as performance guarantees. And we could define what those are as far as the liquidated damages or what needs to be spent to insure, unfortunately that no matter what happens, the host will get the haul at the end of the day. And that’s really the equation that is kind of missing in a lot of this discussion is we would rather see some of the money going into these projects set aside intentionally just for the performance guarantees of the project and less available for building the project. That to us is a more definable risk and that we’re willing to take. As far as the performance guarantees, that’s the hurdle that’s difficult to get over. And that’s my suggestion.

*Michael Eastman (DOE)*

Can I make sure I heard it correctly? In simple terms, one way of using the money is to develop a pool that would be used to make the project whole if it didn’t make it’s performance guarantees.

*Bob Giglio (Foster Wheeler)*

Exactly.

*Michael Eastman (DOE)*

So in another sense if it came up 48% versus 52% efficient there’s going to be some formula that would pay the project to accommodate that difference.

*Bob Giglio (Foster Wheeler)*

Right. Just like in any other commercial agreement we would get into. It’d be the same thing. See we have to tell, we have to insure. If project financing is involved in any of these projects, true project financing, you need really a guarantee on the revenue stream for the lender to say okay he’ll be able to pay me back my debt. Now, how do you get the guarantee? The guarantee comes from “I will make so much electricity or I’ll make whatever product is that this machine will make in this period of time at this rate” and they’re all definable risks, the cost, the product, whether it’s electricity or chemicals or whatever. But how much of that product will you make is really where the risk is for new technologies because we don’t have a benchmark on it. And a lot of these technologies we have a benchmark but it’s pilot scale. So the risk is the big, is the scale up risk. That’s what a lot of, I believe, a lot of these programs are lacking is that insure that at the end of the day, no matter what happens, if it works we’re all ahead of the game. If it doesn’t you have to address a commercial entity who’s putting his money into it saying that “I’m going to do this no matter what.” And if he can’t get the feel of getting that protection, unfortunately in today’s world being deregulated, he’s not going

to take those dollars that he could put into some other investment and insure his return, to something to demonstrate a new technology, unless it's some other incentive program driving him to do that.

*Michael Eastman (DOE)*

How would a requirement for the proposal, would this address the issue? In the proposal we might ask for identify what your liquid data damages pool, are your performance guarantee pool would be to assert that this would make it. In other words, have the proposer lay out here's what we would need to ameliorate that risk, to have ready if in fact it didn't go as planned.

*Bob Giglio (Foster Wheeler)*

That's definitely a step in the right direction. You can either put it on the proposer of a layout, give them two or three options to cover that risk but what I'm suggesting is make it a requirement of the proposal to define how the risk will be covered and what is the risk of the cost sharing? The other thing we talked about is repayment. Basically, what happens is the client will receive 50% say of the project cost? He'll receive that as a grant. Some of the older programs was that the vendor, the technology supplier would then repay back that proportion and the client would basically get that money for free. And still want guarantees from the vendor. So we're on the cuff here for carrying not only repayment but the risk to make sure it works. All I'm suggesting is that we identify in these programs, at least for the larger ones, some plan or options to cover the risk in this project so that a host would step up and say "okay, I can handle that risk, it's quantifiable, my finances will allow me to do that".

*Michael Eastman (DOE)*

Bob, I'm going to put you on the spot and ask you a clarifying question in terms of having thought this risk management issue. How do you characterize in your mind, technology under performance or even failure and consequence say on a host site, and how that risk is managed relative to the proposal that you're suggesting? Where do you draw the battery limits on that kind of?

*Bob Giglio (Foster Wheeler)*

Traditionally, there are three levels of risk when you do say for example, a power project in general. There's a level of risk of getting it done when you say. First of all there's a guarantee of price, which we take all the time. We'll do the job for this amount of money. If it goes over, it's our dollar. And we'll spend that to get it done. The second risk, which happens to be the biggest one, is scheduled risk. You slip a month, two months, three months, of getting that plant on-line, then the liquidated damages could be the lost revenues of power for those three months, which are very, very large numbers. That's the biggest risk. The second risk is performance risk. If you've guaranteed a certain performance in that plant in say it's efficiency, I'm talking heat rate, and you're not making it, the risk is definable as a difference in heat rate that you promised to what it's getting and the cost differential. You pay the client on a rated basis what that cost differential is. And finally the last risk is the output. Okay, whatever you promise to put out power, electricity, steam, whatever it is, if I miss that I pay him a differential for what

I promised and what it's actually doing. So all those risks are pretty definable and they're defined every day. So I'm just trying to say we need to build some of that commercial sense into these demonstration projects. Definitely the bigger ones. The smaller ones may be able to get by without full definition here. But the bigger ones, it's a must.

*Michael Eastman (DOE)*

Thank you Bob

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*Randall Rush (Southern Company)*

I was just listening to that last discussion and my reaction to it is that that's a discussion around a relatively unsophisticated end user. And I would hope if you did those kinds of things to soak up the funds to protect unsophisticated end users you give more credit to those who are technically sophisticated enough to have already factored that into their proposal and are taking those risks anyway. On the kinds of proposals we're looking at, we don't need that kind of help. And we've already factored into our thought process so I would hate to be disadvantaged in terms of the funds because other folks can't belly up to the bar. Another comment, recoupment, I know you guys have both political and realities in terms of recoupment. I would just suggest to you that the more you can do to minimize that burden the better off you're going to be. One thing to ask you would be would a concept where somehow future applications of the technology that met some minimum or exceeded some minimum efficiency, got credits for the carbon dioxide that wasn't emitted and those credits went for recoupment. We've been talking about how much we all think carbon emissions are worth. We haven't signed up for Kyoto. That's one way that sort of for the nation to put it's money where it's mouth is, if after the first application if technology x can't be applied in five different places above some minimum efficiency, give some credit for that to help repay the debt.

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*Ari Geertsema (University of Kentucky – Center for Applied Research)*

With a question I'll leave some thoughts with you that might be easier to reflect on then. The thrust of this exercise is very clearly that in the demonstration of projects that are in need of real push into the market with some additional funding from the federal side. No problem with that at all. I think the applied assumption is that there are enough ideas out there to be commercialized and the very recent awards that we made, eight out of twenty-four actually supports that. There are more ideas out there than can be funded. My concern thought is that on the short-term if we focus on the demonstration phase all we show that we're going to keep the pipeline full with ideas for R&D. It can be short-term very successful in three, five, ten years down the track we might be running a dry pipeline if we're not careful. My suggestion, therefore, is to make provision from the large amounts you mentioned today, maybe three or five percent, and put that aside for what I'd call "Enabling Research". In other words, still directed but accepting that these research projects might be small, maybe a quarter million, half million, three quarters, but



yeah, that's a fair amount of money which can keep people at the research level active. You can get the resources of that brainpower focused on this program. I mean that way have an arsenal of projects to commercialize down the track. So let me just leave that thought with you please.

*Michael Eastman (DOE)*

Thank you Ari

Just a time check. It's about 3:15 and I was thinking that we might be able wrap up by 3:30. Certainly if there are folks that if we're not there we can stay over a little bit. I just didn't want to start running into travel problems. So let's try to move along and arrive closely around that time period. We'll just keep going. I say a hand up back here.

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*Wayne Brown*

Just a quick one here. I'm maybe missing something here but it seems to me the issue of repayment has everything to do with whether you're making money or losing money. I mean if the plant performs in such a way that you make money then being willing to repay is a fairly, you know at some level, is a straightforward thing. The real problem occurs when with the best of intent, a group of parties get together, I mean the component manufacturers each have their own risk and the plant is a combination of them. I mean any of these relatively new technologies is not going to be just on entity that's doing it all. And the judgement as to how much risk remains relative to a probable commercialization is a co-judgement between all of the parties. Why not make the repayment plan tied to whether those risk judgements prove to be true or false? If in with the best of intent you stumble, you either fail to produce the power you thought you could produce at the cost you thought you could produce it or maybe equally important, you've built the plant and you don't have the buyer for the power. I mean my perception at this junction in time is that the assured use of the power is probably the single biggest business risk that's there. If you knew that your power was going to be sold at a fixed known price twenty-four hours a day, seven days a week, it would be a trivial exercise, relatively speaking, to predict what the economics of it are going to play out. So having the government as a buyer of last resort of power would be a huge, I don't know, feasibility of any such scheme, but I mean there would appear to be a huge risk mitigator if it could some how be done. But clearly, is there not a relationship between actual business performance and repayment? Is that not a logical thing to do?

*Michael Eastman (DOE)*

Thank you Wayne. More repayment comments? I think I'll just make a comment on this. I don't see this as really issue oriented. I tried to cover that this morning but the issue here is that we want to be able to communicate effectively with folks outside the program based on what we get back in our proposals and asking for a little bit more information that we get clarity up front as to what we can disclose publicly about the projects. That's really the intent of this. I really don't expect that it's going to be issue oriented but if anyone wanted to comment on that this would be a good time.

Okay, at this point I'm going to open it up if people had areas that or comments they wanted to make about this solicitation in an unstructured way. This would be a good time.

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*Barry Halper (Air Products)*

A couple points. Number one with regard to repayment, suggest that the DOE retain the twenty year life which I think would answer the previous gentleman's concern that if after twenty years if the repayment has not been met then it's forgiven at that point. So you tempt, you try and if you can't meet it at that point then it's forgiven. So that the twenty-year program has worked well for the previous program and hopefully that would be in this one as well. Secondly, I would suggest that you have a three to four year operating plan as part of the project so that it would be in there and that would be again a cost shared portion of the overall project as well. It also tells people that the expectation is that the DOE is going to want to be there as part of the operation and not just simply through the construction. And finally, my understanding I guess in the original clean coal program, I believe the Congress gave the ability to DOE to forego ownership right off the bat of any equipment. And again would suggest that the ownership of equipment be given to the participant right off the bat as well.

*Michael Eastman (DOE)*

Other issues? Okay, we're getting close. I see the landing lights.

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*Edward Armstrong (Silverado Gold Mines)*

We're in Alaska. I would like to suggest that as part of the cost share that you allow the use of replacement cost for depreciated equipment and use some factor for the refurbishing of that equipment. And one other thought, the possibility of giving the finished product to potential users and using that as part of the repayment.

*Michael Eastman (DOE)*

Ed, I need some help there on the last one. We need a little more discussion of what you had in mind there. Do you mean in donating the finished product at no cost the end user be given credit in terms of repayment?

*Edward Armstrong (Silverado Gold Mines)*

What if you have say a utility that you want to have use your product? They have to make some modifications or adaptations to their plan to accept your product, then as opposed to have them purchase your product you give them the product at your cost and plus whatever cost they've used to modify or adapt their facility to accept your product, that all of that be factored into the repayment.

*Michael Eastman (DOE)*

Okay, I understand. Thank you. Okay. I sense we're there. Let's put a wrap on this. I'd like to extend my personal appreciation for you staying over this Thanksgiving week. I think this was really a great couple of days and I think this session here is certainly helpful to us. And hopefully you'll find the solicitation that we put out in December to be responsive. It certainly is our intent. So thank you all. Have a safe trip home.

**\*\*\*\*\* End of Document \*\*\*\*\***